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An element that is absent in many education reform efforts is the interaction among students and between students and teachers. Martin Bonsangue's article describes how students working together in calculus workshop groups succeeded to a remarkable degree compared with students who did not participate in the workshop groups. His important study was reported to a group at the National Academy of Sciences. Bonsangue describes the workshops as a humanistic experience.

Kazem Mahdavi's discussion of Attracting Math Majors at Potsdam is a rehearsal of the study by Rick Lutttmann on the Basis for the Success of the Potsdam Program and Clarence Stephens' description of a Humanistic Academic Environment for Learning Undergraduate Mathematics which are reprinted from earlier HMN Newsletters.

These essays and studies, I believe, describe examples of the suggestions found in *Everybody Counts* (National Research Council 1985, pp 58-59):

> Educational research offers compelling evidence that students learn mathematics well only when they *construct* their own mathematical understanding... This happens most readily when students work in groups, engage in discussion, make presentations, and in other ways take charge of their own learning.

Professional Standards for Teaching Mathematics (National Council of Teachers of Mathematics 1991, p 3) lists five major shifts that are needed to move from current practice to mathematics teaching for the empowerment of students. We need to shift—

* toward classrooms as mathematical communities—away from classrooms as simply a collection of individuals;
* toward logic and mathematical evidence as verification—away from the teacher as the sole authority for right answers;
* toward mathematical reasoning—away from merely memorizing procedures;
* toward conjecturing, inventing, and problem solving—away from an emphasis on mechanistic answer-finding;
* toward connecting mathematics, its ideas and its applications—away from treating mathematics as a body of isolated concepts and procedures.

Every essay and every poem in the journal helps to describe and define humanistic mathematics. Bill Rosenthal takes a direct and whimsical approach in his essay. He reflects on the consequences of an unambiguous definition—that must be followed by theorem, proof. He then fantasizes that this would be followed by applied,

pure, and homological humanistic mathematics, finally to be honored by a Bourbaki volume.

Humanistic Mathematics carries with it an awareness of and a sensitivity to what mathematics shares with the other humanities. Humanistic dimensions of mathematics include:

- An appreciation of the role of intuition in understanding and creating concepts that appear in their finished version, to be a result of a "merely technical" process.
- An understanding of the value judgements in the growth of any discipline. Logic alone never completely accounts for what is investigated, how it is investigated, or why it is investigated.

Many who have heard of humanistic mathematics quickly recognize this movement as a source of new vocabulary, and new colleagues who feel as they do about mathematics in their lives and in their students' lives. The movement, which began as the personal vision of a few, has now become a major part of mathematical culture. What was viewed with skepticism is now accepted and expected. In addition to the essays in this journal there are twenty-two essays in the forthcoming volume Essays in Humanistic Mathematics, in the MAA Notes series.

The MAA Notes volume is a broad introduction to the ideas of humanistic mathematics. After an introductory section, there are sections on Mathematics in the World, the Inner Life of Mathematics, Teaching and Learning Experiences, and Contemporary Views of Old Mathematics. The volume can be ordered from the Mathematical Association of America (800) 331-1622 in the fall of 1993.

The importance of our Journal continues to grow. The Library of Congress was alerted to the change from Newsletter to Journal (and the need for a new ISSN number) by its Paris office. The librarian at the Sprague Library of Harvey Mudd College tells me of the many requests for interlibrary loans of articles from our publication. Other U.S. libraries that carry the Journal are:

Cal Poly Pomona
University of California at Santa Barbara
University of Minnesota Math Library
Wichita State University
University of Wisconsin Center, Fond du Lac

German libraries that requested to be on the mailing list include:

University of Göttingen
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